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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,590	11/07/2001	Thomas W. Smith	D/A1503	4094

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,590	SMITH ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____ .

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-20 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11/7/01 . 6) Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 9-10, and 13-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Gundlach et al. (U.S. 6,054,505).

Gundlach et al. disclose ink comprising water, 0.1-40% nonpolymeric salt, 0.01-1% sulfite salt, 1-5% anionic dye, and polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymer of vinyl pyrrolidone and vinyl imidazolium salt. It is calculated that the ratio of dye to lightfastness-imparting agent, i.e. the sulfite salt, is for example, 5:1. It is further disclosed that the above ink is preferably printed using thermal ink jet printer but Gundlach et al. also disclose the use of other conventionally known ink jet printing methods including acoustic ink jet printing and piezoelectric ink jet process (col.1, lines 41-43 and 44-47, col.2, line 46-col.3, line 3, col.6, lines 62-65, col.7, lines 25-27 and 40-55, col.13, lines 31-32, col.15, lines 42-45, col.19, lines 51-58, col.22, lines 35-38, and col.23, lines 18-24). Although there is no explicit disclosure that the dye, polyquaternary amine, and sulfite salt form a complex, given that Gundlach et al. disclose that upon mixing the ink ingredients, the anionic dye and the polyquaternary amine compound form a complex

(col.15, lines 42-50) and given that the anionic dye, polyquaternary amine, and sulfite salt disclosed by Gundlach et al. are identical to that presently claimed, it is clear that these ingredients will inherently form a complex.

In light of the above, it is clear that Gundlach et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

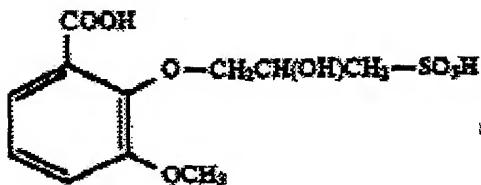
5. Claims 1-8 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gundlach et al. (U.S. 6,054,505) in view of Vieira et al. (U.S. 5,686,633).

Gundlach et al. disclose ink comprising water, 0.1-40% nonpolymeric salt, 1-5% anionic dye, and polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymer of vinyl pyrrolidone and vinyl imidazolium salt. It is further disclosed that the above ink is preferably printed using thermal ink jet printer but Gundlach et al. also disclose the use of other conventionally known ink jet printing methods including acoustic ink jet printing and piezoelectric ink jet process (col.1, lines 41-43 and 44-47, col.2, line 46-col.3, line 3, col.6, lines 62-65, col.7, lines 25-27 and 40-55, col.13, lines 31-32, col.15, lines 42-45, col.19, lines 51-58, col.22, lines 35-38, and col.23, lines 18-24).

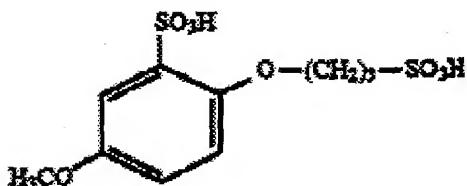
The difference between Gundlach et al. and the present claimed invention is the requirement in the claims of (a) anionic lightfastness-imparting agent and (b) the number of cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

With respect to difference (a), Vieira et al., which is drawn to ink jet inks, disclose the use of 0.01-30% anionic lightfastness imparting agent identical to that presently claimed such as

2,3-dimethoxybenzoic acid, 3,4,5-trimethoxybenzoic acid, 4,5-dimethoxyphthalic acid, 2,3-bis-(carboxymethoxyloxy)-benzoic acid,



OR



The motivation for using these lightfastness imparting agents is to produce stable ink that will not fade or discolor (col.1, lines 6-10, 25-26, and 36-38, col.6, lines 57-58, col.18, lines 40-58, col.19, lines 40-45, and col.20, lines 15-20).

Although there is no disclosure in either Gundlach et al. or Vieira et al. of complex of dye, polyquaternary amine, and lightfastness imparting agent as presently claimed, given that Gundlach et al. disclose that upon mixing the ink ingredients, the anionic dye and the polyquaternary amine compound form a complex (col.15, lines 42-50) and given that Gundlach et al. in view of Vieira et al. disclose anionic dye, polyquaternary amine, and lightfastness

imparting agent identical to those presently claimed, it is clear that these ingredients will intrinsically form a complex.

In light of the motivation for using lightfastness imparting agents disclosed by Vieira et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such lightfastness imparting agent in the ink of Gundlach et al. in order to produce stable ink that will not fade or discolor, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that Gundlach et al. disclose that the number of cationic sites on the polyquaternary amine compound must be larger than the number of anionic sites on the dye in order to avoid the polymer from precipitating, however, there is no explicit disclosure of the number of cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

However, given that Gundlach et al. disclose that the number of cationic groups should be larger than the number of anionic groups in order to avoid precipitation, it would have been obvious to one of ordinary skill in the art to control the number of cationic sites on the polyquaternary amine per one anionic site on the dye or per one anionic site on the lightfastness imparting agent to values, including that presently claimed, in order to prevent precipitation and to produce an ink with excellent shelf stability, and thereby arrive at the claimed invention.

6. Claims 1-7 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gundlach et al. (U.S. 6,054,505) in view of Yokoyama et al. (U.S. 4,256,493).

Gundlach et al. disclose ink comprising water, 0.1-40% nonpolymeric salt, 1-5% anionic dye, and polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymer of vinyl pyrrolidone and vinyl imidazolium. It is further disclosed that the above ink is preferably printed using thermal ink jet printer but Gundlach et al. also disclose the use of other conventionally known ink jet printing methods including acoustic ink jet printing and piezoelectric ink jet process (col.1, lines 41-43 and 44-47, col.2, line 46-col.3, line 3, col.6, lines 62-65, col.7, lines 25-27 and 40-55, col.13, lines 31-32, col.15, lines 42-45, col.19, lines 51-58, col.22, lines 35-38, and col.23, lines 18-24).

The difference between Gundlach et al. and the present claimed invention is the requirement in the claims of (a) anionic lightfastness-imparting agent and (b) the number of cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

With respect to difference (a), Yokoyama et al., which is drawn to ink jet inks, disclose the use of UV absorbing agent such as 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid or 2,2'-dihydroxy-4,4'-dimethoxybenophenone-5-sulfonic acid in order to produce ink with good resistance to light that will not clog the printer nozzles (col.3, lines 2-26 and 38-60).

Although there is no disclosure in either Gundlach et al. or Yokoyama et al. of complex of dye, polyquaternary amine, and lightfastness imparting agent as presently claimed, given that Gundlach et al. disclose that upon mixing the ink ingredients, the anionic dye and the polyquaternary amine compound form a complex (col.15, lines 42-50) and given that Gundlach

et al. in view of Yokoyama et al. disclose anionic dye, polyquaternary amine, and lightfastness imparting agent identical to those presently claimed, it is clear that these ingredients will intrinsically form a complex.

In light of the motivation for using anionic lightfastness imparting agents disclosed by Yokoyama et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such lightfastness-imparting agent in the ink of Gundlach et al. in order to produce ink with good resistance to light that will not clog the printer nozzles, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that Gundlach et al. disclose that the number of cationic sites on the polyquaternary amine compound must be larger than the number of anionic sites on the dye in order to avoid the polymer form precipitating, however, there is no explicit disclosure of the number of cationic sites on the polyquaternary amine per one anionic site on the dye or the number of cationic sites on the polyquaternary amine per one anionic site on the lightfastness imparting agent.

However, given that Gundlach et al. disclose that the number of cationic groups should be larger than the number of anionic groups in order to avoid precipitation, it would have been obvious to one of ordinary skill in the art to control the number of cationic sites on the polyquaternary amine per one anionic site on the dye or per one anionic site on the lightfastness imparting agent to values, including that presently claimed, in order to prevent precipitation and to produce an ink with excellent shelf stability, and thereby arrive at the claimed invention.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gundlach et al. (U.S. 6,004,899) disclose ink comprising water, anionic dye, and polyquaternary amine compound, however, there is no disclosure of anionic lightfastness imparting agent as presently claimed.

Laver (U.S. 5,096,489) discloses recording medium coated with composition comprising polyquaternary amine compound and anionic lightfastness imparting agent as presently claimed and ink comprising anionic lightfastness imparting agent, however, there is no disclosure that the ink comprises polyquaternary amine compound as presently claimed.

Malhotra et al. (U.S. 6,432,184) disclose ink comprising lightfastness compound, polydiallyl dialkyl ammonium, and colorant, however, there is no disclosure that the lightfastness imparting agent is anionic as required in the present claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
August 7, 2003